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of JP-H8-009488-A

[0021]

[Embodiments] The first embodiment of the present invention will be described as follows, with referring to the Figs 1 to 3. The outer case 1 is shown in Figs 1 and 2. The outer case is an elongate shape and is structured by the case main body 2 whose most part is made of hard resin. The case main body 2 consists of the front body member 3 and the rear body member 4. Each body member is integral-molded and coupled with each other by the screw 5 in such manner that opening portion of the body member is facing each other. The body members 3 and 4 are made of thermoplastic resin (for example, ABS, polycarbonate resin, polystyrene resin, polypropylene resin, or the like).

[0022] In the case main body 2, a receiver, a microphone, operation portions (button, or the like), a LCD panel, a battery as an electric source, an electronic circuit, and the other internal mechanism are equipped (not shown in the Drawings). The receiver is incorporated in an upper side portion of the case main body 2 in the longitudinal direction of the case main body 2. An opening 6 is provided on an upper side of a front surface of the front body member 3 so that the opening 6 faces to the receiver. The microphone is incorporated in a bottom side portion of the case main body 2. An opening 7 is provided on a bottom side of the front surface of the front body member 3 so that the opening 7 faces to the microphone. A plural opening 8 are also provided at upper than the opening 7 on the front surface of the front body member 3 in order to expose the buttons for operations. A window 9 for the LCD panel is provided on the front surface of the front body member 3 and between the plural opening 8 and the opening 6.

[0023] The buffering members 11 and 12 are provided along

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entire circumference of outer side faces of the case main body  
2. Each buffering member is made of integral-molded silicon  
rubber, which is a kind of soft resin. The buffering members  
11 and 12 are provided on the body members 3 and 4  
5 respectively and utilized for coupling the body members 3 and  
4 each other. Moreover, the buffering member 11 and 12 are fit  
into the concave portions 13 and 14, which are provided on the  
outer face of the body members 3 and 4, and the buffering  
members are slightly protruded from the outer face of the body  
10 members.

[0024] The body members 3 and 4 and the buffering members 11  
and 12 may be formed separately and fixed with each other by  
using adhesives, or the like. It may also form the body  
members and the buffering members integrally by composite  
15 molding. Thereby, it becomes more productive.

[0025] The composite molding is explained with referring to  
Figs. 3(a) and 3(b). In the following paragraphs, it mainly  
explains about the front body member 3 to be formed by the  
composite molding. Regarding the rear body member 4, the  
20 similar way is applied. In Figs. 3(a) and 3(b), the reference  
numeral 21 refers to a fixed mold and 22 to a movable mold.  
The fixed mold 21 and the movable mold 22 open and close in  
the vertical direction of the Figs. 3(a) and 3(b). Moreover,  
the movable core 23 is provided in the movable mold 22 so as  
25 to be able to slide in the vertical direction. In the other  
hand, the first gate 24 as a direct gate is provided in the  
fixed mold 21. Additionally, when the molds 21 and 22 are  
closed, the second gate 25 as a side gate is formed between  
the molds.

30 [0026] As shown in Fig. 3(a), when the composite molding is  
executed, with closing the molds 21 and 22, the movable core

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23 is slid to upward and struck to the fixed mold 21. In this state, the first cavity 26 having a shape of the front body member 3 is formed among the fixed mold 21, the movable mold 22, and the movable core 23. Then, the first resin, which is melting, is filled into the first cavity 26 through the first gate 24. Thereby, the front body member 3 is molded. After cooling and solidifying the first resin, namely the front body member 3, the movable core 23 is slid to downward as shown in Fig. 3(b). In this state, the second cavity 27 having a shape of the buffering member 11 is formed among the fixed mold 21, the movable mold 22, the movable core 3, and the front body member 3. Then, the second resin, namely a material of silicone rubber, is filled into the second cavity 27 through the second gate 25. And then, the second silicon is solidified by heating. Thereby, the buffering member 11 is molded.

[0027] According to the above-mentioned structure of the outer case 1, it is possible to prevent the outer case 1 and the internal mechanisms from breaking even if a user drops a mobile terminal device into a floor, or slams the mobile terminal device against something. Because, the outer case 1 can absorb shocks by that the buffering members 11 and 12 made of silicone rubber are provided on outer surface of the case main body 2 made of hard resin, and can made shocks be absorbed. Moreover, it increases likelihood that the buffering members collide to something comparing to collisions of the outer case 1 in various approach because the buffering members are provided along entire circumference of the side surfaces of the case main body 2. Accordingly, the aforementioned effects of the burring members are certain to be work on shock absorbing. Furthermore, the shock absorbing effect become more effective because the buffering members 11 and 12 are provided on a coupling portion of the body members 3 and 4, which are

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weak in strength comparatively. The strength of the outer case 1 is also increased by that the buffering members 11 and 12 are provided to the case constituted of the case main body 2 whose most part is made of hard resin.

5 [0028] The buffering members 11 and 12 are utilized as a slip stopper when a user grips the mobile terminal device, because the buffering members are provided along entire circumference of the side surface of the case main body 2. Thereby, it occurs hardly that a user drops the mobile terminal device  
10 into a floor, or the like. In addition, it may form the buffering members 11 and 12 to be waved-shape in order to further increase the effect as a slip stopper.

[0029] Fig. 4 shows the second embodiment of the present invention. In the second embodiment, the concave grooves 33  
15 and 34 are provided on the buffering members 31 and 32, respectively. Each end portion of the body member is fit into the each concave groove provided on the buffering member provided on the other body member. In this embodiment, the body members 3 and 4 and the buffering members 31 and 32 may  
20 be molded separately and then assembled. It is also possible to mold the body members 3 and 4 and the buffering members 31 and 32 integrally by using one mold pattern with the composite molding.

[0030] According to the structure of the second embodiment,  
25 the buffering members 31 and 32 are fixed in a situation that the body members 3 and 4 are coupled with each other, even if the buffering members 31 and 32 are not adhered each other. It is caused by that the buffering members 31 and 32 are sandwiched by the body members 3 and 4. Moreover, it is  
30 possible to fix the buffering members 31 and 32 to the case main body 2 even if the buffering members and the body members

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are not fusion bonded each other in case of using the composite molding. Accordingly, it is possible to make easier and more definitely to assemble the buffering members 31 and 32 on the case main body 2.

5 [0031] Fig. 5 shows the third embodiment of the present invention. In the third embodiment, a single buffering member 36 provided as the buffering member sandwiched by the body members 3 and 4. On both sides of the buffering member 36, the concave grooves 37 and 38 are provided. The end portions of  
10 the body members 3 and 4 are fit into the concave grooves 38 and 37 respectively. Thereby, the buffering member 36 is fixed by that the body members 3 and 4 sandwich the buffering member 36. Accordingly, in the third embodiment as well as the second embodiment, it is not necessary to fusion bond the body  
15 members and the buffering member and, nevertheless it is possible to fix the buffering member 36 certainly to the case main body 2.

[0032] In addition, in the first and second embodiments, it may be possible to provide the buffering members 11 and 12,  
20 and 31 and 32 on any one of the body members 3 and 4.

\* Claims 1-7 are omitted; and

\* Paragraphs [0001]-[0020] and [0033]-[0049] are omitted.

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[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a perspective view showing the outer case of the mobile terminal device of the first embodiment of the present invention.

[Fig. 2]

Fig. 2 is a sectional view showing the outer case of the mobile terminal device of the first embodiment of the present invention.

10 [Fig. 3]

Figs. 3(a) and 3(b) are sectional views of the molding device for molding the outer case of the mobile terminal device of the first embodiment of the present invention.

[Fig. 4]

15 Fig. 4 is a sectional view showing the outer case of the mobile terminal device of the second embodiment of the present invention.

[Fig. 5]

20 Fig. 5 is a sectional view showing the outer case of the mobile terminal device of the third embodiment of the present invention.

\* [Fig. 6]~[Fig. 11] are omitted.

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[Brief Description of Reference Numerals]

1 outer case

2 case main body

3 front body member

5 4 rear body member

11, 12 buffering member

31, 32 buffering member

36 buffering member

10 \*Reference Numerals 41-42, 46-49, 51-53, 55-58, and 60-61  
are omitted; and

\*Reference Sign "G" is omitted.